Nolichucky Reservoir Flood Remediation Environmental Impact Statement

(X) Draft ( ) Final

Lead Agency: Tennessee Valley Authority (TVA)

Abstract: TVA has prepared this Environmental Impact Statement (EIS) to identify and evaluate a range of ways to address flooding effects of Nolichucky Dam and the accumulated sediment in Nolichucky Reservoir on land and property not owned by the federal government. Nolichucky Dam was built in 1913 as a single-purpose power production facility and was acquired by TVA in 1945. All four electric generators were removed from service between 1965 and 1972 because of sediment-related problems. Since 1972, the project has been used for wildlife management and environmental education. The federal government owns approximately 1,400 acres of land under and around the reservoir and holds easements over approximately 370 acres of land along this part of the river. These land rights include approximately 54 percent of the area within the present 500-year floodplain. Most of the remaining approximately 1,125 acres in the 500-year floodplain is in private ownership. Recent studies indicate that silt accumulations in the reservoir have raised the 100-year flood level by as much as 10 feet above what it probably was in 1945 and, even then, the project landrights did not include all of the area that would have been affected during flood events. Four alternatives are discussed in detail in this EIS. Alternative A (No Action) would not change the potential for homes, historic structures, and other property in the area to be subject to flooding. Alternative B would involve the acquisition of fee title or flood easements over approximately 1,000 acres of private land within the present 500-year flood elevation upstream from Nolichucky Dam. Alternative C would involve lowering the height of the spillway in Nolichucky Dam and removing some sediment from the reservoir pool. Alternative D would involve removing all visible components of the dam and more sediment from the river valley. The potential environmental effects of Alternatives A and B are described in this EIS, along with general evaluations of the potential effects associated with Alternatives C and D. If either Alternative C or D was adopted, the site-specific details of the project and its site-specific environmental effects would be addressed in a supplement to this EIS. At this time, TVA has not selected a preferred alternative way to address the flooding effects caused by Nolichucky Dam and Reservoir on non-federal land and property. TVA encourages members of the public and representatives from interested agencies to study the content of this draft EIS and to comment on the analysis it contains.

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The deadline for comments on this draft EIS is March 29, 2002.

EXECUTIVE SUMMARY

The Tennessee Valley Authority (TVA) has prepared this draft Environmental Impact Statement (EIS) in accordance with Council of Environmental Quality regulations and TVA procedures for implementing the National Environmental Policy Act (NEPA). The purpose of this EIS is to identify and evaluate a range of ways to address flooding effects of Nolichucky Dam and the accumulated sediment in Nolichucky Reservoir on land and property not owned by the federal government.

The Nolichucky River watershed includes parts of Avery, Mitchell, and Yancey counties in western North Carolina; and parts of Cocke, Greene, Hamblen, Jefferson, Unicoi, and Washington counties in eastern Tennessee. Nolichucky Dam is located at Nolichucky River Mile 46, about 7.5 miles south of Greeneville, in Greene County, Tennessee. Nolichucky Reservoir, also known as Davy Crockett Lake, extends upstream about six miles from the dam. Nolichucky Dam was built by the Tennessee Eastern Electric Company in 1913 as a single-purpose power production facility and was acquired by TVA in 1945. All four electric generators were removed from service between 1965 and 1972 because of sediment-related problems. Since 1972, the project has been used for wildlife management and environmental education.

A review of the present federal land rights around Nolichucky Reservoir indicates that the federal government owns approximately 1,400 acres of land under and around Nolichucky Reservoir and holds easements over approximately 370 acres of land along this part of the river. These land rights include approximately 54 percent of the area within the present 500-year floodplain and approximately 63 percent of the area within the 100-year floodplain. Most of the remaining approximately 1,125 acres in the 500-year floodplain is in private ownership (41 percent of this area). Approximately 64 privately-owned structures occur within this 500-year floodplain, 19 of which might be eligible for listing on the National Register of Historic Places.

In 1998, partly in response to letters and questions from local property owners, TVA began reviewing the areas around Nolichucky Reservoir that would be affected during flood events. Staff analysis indicated that the

present 100-year floodplain includes approximately 2,000 acres and the larger area within the 500-year floodplain includes approximately 2,450 acres. Recent silt accumulations in the reservoir have raised the 100-year flood level by as much as 10 feet above what it probably was when TVA acquired the project in 1945. Even in 1945, the project landrights did not include all of the area which would have been affected by Nolichucky Dam during flood events.

Alternatives

Suggestions about possible ways to address the flooding effects on non-federal land were made by the public, various agencies, and TVA staff during the scoping process for this project. The four alternatives that developed during this evaluation process and are discussed in detail in this EIS were: A -- No Action, B -- acquire the affected land or land rights, C -- lower the spillway in the dam and, D -- remove Nolichucky Dam.

Under **Alternative A (No Action)**, TVA would not take any action to address the potential flood impacts on non-federal lands that could occur because of the presence of Nolichucky Dam and the sediment accumulation in Nolichucky Reservoir. TVA would not acquire any additional land rights, take any action to remove sediment from the reservoir, or reduce the potential for flooding in any way. Information about the boundaries of various projected flood levels would be provided to appropriate agencies in Greeneville, Greene County, and to landowners in the affected areas. TVA would assist agencies and individuals in understanding the potential flooding effects around the reservoir but would not attempt to influence what individual owners would do on their land. Greene County probably would require compliance with applicable local floodplain regulations during any future development of the land around the reservoir. Nolichucky Dam and Powerhouse would continue to be maintained as required by federal Dam Safety regulations and to preserve their historic value.

If Alternative A was adopted, present environmental conditions and ongoing trends would continue both in the water and on the land surrounding the reservoir. Present flood elevations upstream from Nolichucky Dam would not be affected by this alternative and approximately 1,000 acres of land not in federal ownership or covered by flood easements would continue to be

located within the 500-year floodplain affected by the dam. Approximately 64 privately-owned structures occur within this 500-year floodplain, 19 of which might be eligible for listing on the National Register of Historic Places. This alternative would not have any effect on the present population or economic conditions in the area adjacent to Nolichucky Reservoir.

Under **Alternative B (Acquire Land Rights)**, TVA would address the potential flooding effects on non-federal land by acquiring either fee title or easements with the right to flood all of the non-federal land within the present 500-year flood boundary around Nolichucky Reservoir (about 1,000 acres). TVA would decide whether to acquire fee title or a flood easement on any given tract based on a tract-specific evaluation of the potential flooding effects. Fee simple acquisition would mean that TVA would buy the affected land, all structures built on it, and would hold all rights concerning the use of that land. If TVA acquired only a flood easement, TVA would buy the right to overflow and flood specific parts of the property on an intermittent and temporary basis. The owner could continue to use the easement land in many ways, but would relinquish the right to build structures below a specific elevation on the affected property and would have to receive TVA approval prior to developing the affected land. Nolichucky Dam and Powerhouse would continue to be maintained as required by federal Dam Safety regulations and to preserve their historic value.

If Alternative B was adopted, present flood elevations upstream from Nolichucky Dam would not be affected but the federal government would own either fee title or flood easements over all of the land within the 500-year floodplain upstream from the dam. Most of the new land acquired in fee probably would be added to the existing wildlife management area, presently managed by the Tennessee Wildlife Resources Agency. Uses of the land within this floodplain area would be controlled to minimize the potential for flooding effects, and all structures on this land, including potentially eligible historic structures, probably would be floodproofed, relocated to higher ground, or removed. Environmental conditions and ongoing trends in the water and on the land surrounding the reservoir would not be adversely affected. In fact, public ownership or control over the entire floodplain area could lead to improved terrestrial habitat conditions, more resource

protection, and increased recreation potential. If increased recreation use did occur, this alternative could result in modest positive effects on economic conditions in the area surrounding Nolichucky Reservoir.

Under **Alternative C (Lower Nolichucky Dam)**, TVA would address the potential flooding effects on non-federal land and property by lowering the spillway part of Nolichucky Dam after removing or stabilizing sediment in the reservoir. The intent of this alternative would be to lower the spillway by approximately 40 feet (to elevation 1200) so that the 500-year flood elevation associated with the modified dam would only affect land already in federal ownership or covered by existing flood easements. A general evaluation of the environmental effects associated with the types of activities that would be included this alternative is included in this EIS; however, the site-specific details of the project would be determined as part of the pre-construction design process. If this alternative was adopted, the site-specific environmental effects evaluation would be added in a supplement to the final EIS.

If Alternative C was adopted, lowering the spillway and removing sediment from the reservoir would reduce flood elevations to the point that the 500-year floodplain associated with Nolichucky Dam would not affect private land and property; however, some presently buried archaeological and historic sites might be exposed as sediment was relocated out of the reservoir pool. All federal land around the reservoir would remain in public ownership and would continue to be used for wildlife management, environmental education, and public parks, while private land no longer in flood-prone areas would be available for other uses.

Lowering the reservoir pool by 40 feet would lower the groundwater level adjacent to the reservoir, in some places enough that nearby well performance could be adversely affected. Lowering the pool level also would drain approximately 310 acres of high quality wetlands around and in the reservoir, which would adversely modify the habitats of a variety of terrestrial plants and animals that typically occur only in wetlands. Lowering the spillway and disturbing the sediment in Nolichucky Reservoir could result in some increased sedimentation in the river downstream from Nolichucky Dam

during the construction period; however, the inclusion of sediment control measures and monitoring requirements would result in only insignificant effects on downstream aquatic life. Adoption of this alternative might still result in significant adverse construction effects on one or more silt-intolerant protected aquatic species living only where the dam presently protects them from excessive sedimentation. Recreation and resource management opportunities in the area would be different from present uses around the reservoir and probably would shift to focus more on river-related activities. The local economy would receive a short-term benefit from the construction activities included in this alternative and a possible minor long-term benefit if recreation use did increase in the area.

Under **Alternative D (Remove Nolichucky Dam)**, TVA would address the flooding effects of Nolichucky Dam and reservoir on the adjacent non-federal lands using the same general approach as Alternative C -- lowering the 500-year flood elevation by lowering the dam and removing or stabilizing the accumulated sediment. Under this alternative, however, TVA would completely remove all visible components of Nolichucky Dam and powerhouse from the river valley. The general types and sequence of activities included in this alternative would be the same as those described under Alternative C; however, some specific differences would occur associated with removing the remainder of the dam, the powerhouse, and more of the accumulated sediment. If this alternative was adopted, site-specific details of the project would be determined as part of the pre-construction design process and the site-specific environmental effects would be added in a supplement to the general evaluation presented in this EIS.

Adoption of Alternative D would result in the removal of all visible components of Nolichucky Dam from the valley and the restoration of a free-flowing river through this area. The resulting 500-year flood elevation would be well within the existing federal landrights in the area. All federal land around the reservoir would remain in public ownership and would continue to be used for wildlife management, environmental education, and public parks. Some presently buried archaeological and historic sites might be exposed as sediment was relocated out of the full length of the reservoir pool.

Lowering the reservoir pool by 70 feet would lower the groundwater level adjacent to the reservoir, in places enough that nearby well performance could be adversely affected. Approximately 310 acres of wetlands upstream from the dam would be drained, which would adversely modify the habitats of a variety of terrestrial plants and animals typically found only in wetlands. The land disturbance activities associated with this project would include sedimentation control measures and monitoring requirements which would result in insignificant effects on surface water quality, sedimentation, and aquatic life in the Nolichucky River during the construction period. Following the complete removal of the dam, however, the river bed downstream from the dam site would be blanketed with sand and other coarse sediment, which would have immediate and significant adverse effects on some aquatic species. Freshwater mussels and other uncommon bottom-dwelling species; including two listed federal endangered species, might be eliminated from the river. Once the dam was removed, recreation activities in the former reservoir area could expand to include tubing, float fishing, and possibly as good or better canoeing potential as exists in the first 10 miles upstream or downstream from the reservoir. The net impact of this alternative on the local economy and employment probably would be positive, especially over the long term.

Comparison

The adoption of Alternative A or B would result in very similar effects on the environment; however, Alternative B would address the potential flooding effects on non-federal land and property while Alternative A would not. Alternative B would involve the acquisition of fee title or flood easement rights over approximately 1,000 acres of private land within the present 500-year flood elevation upstream from Nolichucky Dam. Alternative A would not affect the ownership of this land; however, homes, historic structures, and other property located on that land would continue to be subject to flooding.

The adoption of Alternative C or D also would result in similar environmental effects; however, those effects would be very different from what would occur under Alternative A or B. Both C and D would involve modifications to the dam that would reduce the flood elevations around the reservoir and avoid the project-related flooding effects on private land and property, including

homes and historic structures. Results of this general evaluation indicate that both of these projects also could drain about 310 acres of significant wetlands, lower groundwater levels in wells close to the reservoir, expose some buried archaeological or historic sites, and cause adverse effects on aquatic life in the river downstream from Nolichucky Dam. Largely because it would involve the complete removal of Nolichucky Dam, Alternative D would likely result in more extensive adverse effects on the downstream part of the river and aquatic life than Alternative C. Once the dam was removed, Alternative D would result in significant changes in the downstream river substrate, which could eliminate some types of bottom-dwelling animals, including two federal endangered mussel species. Alternative D also would reconnect the upstream and downstream parts of the river and refocus local recreation activities on the free-flowing river. Both of these alternatives would include a variety of ways to avoid, minimize, or mitigate the potential adverse effects; however, some of those effects (such as the loss of the wetlands and elimination of endangered aquatic species) would be extremely difficult to mitigate completely.

The estimated costs and completion times associated with these alternatives are as follows:

Alternative	Cost	Duration
A	minimal	3 months
B	$15 - $20 Million	3 years
C	$45 - $70 Million	5 - 10 years
D	$90 - $150 Million	10 - 12 years

The construction activities associated with both Alternatives C and D would provide some short-term economic benefit to the local area. All of the action alternatives (Alternatives B, C, and D) might result in some long-term economic benefits; however, the extent of those potential benefits would depend on decisions that would be made by many individuals and governmental agencies.

At this time, TVA has not selected a preferred alternative way to address the flooding effects caused by Nolichucky Dam and Reservoir on non-federal land and property. TVA encourages members of the public and

representatives from interested agencies to study the content of this draft EIS and to comment on the analysis it contains. Those comments will help determine the scope and content of any revisions to be made in the final EIS and the identification of a preferred alternative.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

[The map showing land ownership around Nolichucky Reservoir is presented in Appendix A, the first section following the EIS text.]